

Plug-in Signal Conditioners M-UNIT

FREQUENCY TRANSMITTER

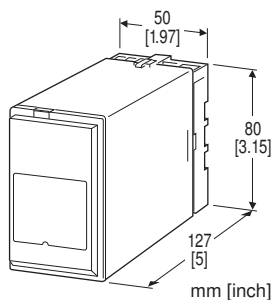
(field-programmable)

Functions & Features

- Converting the output from a pulse-type transducer into standard process signal
- Micro-processor based
- Field-programmable frequency range
- Linearization available for flow compensation
- Averaging non-uniform pulses
- Excitation
- Isolation up to 2000 V AC
- Loop testing via hand-held programmer PU-2x
- High-density mounting

Typical Applications

- Positive displacement flowmeters, turbine flowmeters and vortex flowmeters
- Proximity switches
- Oval flowmeters



MODEL: JPA-[1][2]-[3][4]

ORDERING INFORMATION

- Code number: JPA-[1][2]-[3][4]

Specify a code from below for each of [1] through [4].

- (e.g. JPA-23-B/Q)
- Frequency range (e.g. 0 - 152.3 Hz)
- Special output ranges (For codes Z & 0)
- Linearization data (max. 16 points)

Use Ordering Information Sheet (No. ESU-1673) to specify linearization data when the I/O signals are non-linear.

- Specify the specification for option code /Q (e.g. /C01/S01)

Note: Consult factory on applications with a sensor handling periodically (& quickly) changing frequency (e.g. oval flowmeter).

[1] INPUT

- 1: Open collector (Excitation: 12 V @ 30 mA)
- 2: Voltage pulse (Excitation: 12 V @ 30 mA)
- 3: Mechanical contact (Excitation: 12 V @ 30 mA)

[2] OUTPUT

Current

- A: 4 - 20 mA DC (Load resistance 750 Ω max.)
- B: 2 - 10 mA DC (Load resistance 1500 Ω max.)
- C: 1 - 5 mA DC (Load resistance 3000 Ω max.)
- D: 0 - 20 mA DC (Load resistance 750 Ω max.)
- E: 0 - 16 mA DC (Load resistance 900 Ω max.)
- F: 0 - 10 mA DC (Load resistance 1500 Ω max.)
- G: 0 - 1 mA DC (Load resistance 15 kΩ max.)
- Z: Specify current (See OUTPUT SPECIFICATIONS)

Voltage

- 1: 0 - 10 mV DC (Load resistance 10 kΩ min.)
- 2: 0 - 100 mV DC (Load resistance 100 kΩ min.)
- 3: 0 - 1 V DC (Load resistance 1000 Ω min.)
- 4: 0 - 10 V DC (Load resistance 10 kΩ min.)
- 5: 0 - 5 V DC (Load resistance 5000 Ω min.)
- 6: 1 - 5 V DC (Load resistance 5000 Ω min.)
- 4W: -10 - +10 V DC (Load resistance 10 kΩ min.)
- 5W: -5 - +5 V DC (Load resistance 5000 Ω min.)
- 0: Specify voltage (See OUTPUT SPECIFICATIONS)

[3] POWER INPUT

AC Power

- B: 100 V AC
- C: 110 V AC
- D: 115 V AC
- F: 120 V AC
- G: 200 V AC
- H: 220 V AC
- J: 240 V AC

DC Power

- S: 12 V DC
- R: 24 V DC
- V: 48 V DC

[4] OPTIONS

blank: none

/Q: With options (specify the specification)

SPECIFICATIONS OF OPTION: Q (multiple selections)

COATING (For the detail, refer to our web site.)

/C01: Silicone coating

/C02: Polyurethane coating

/C03: Rubber coating

TERMINAL SCREW MATERIAL

/S01: Stainless steel

RELATED PRODUCTS

- Programming Unit (model: PU-2x)
- PC configurator software (model: JXCON)

Downloadable at our web site.

A dedicated cable is required to connect the module to the PC. Please refer to the internet software download site or the users manual for the PC configurator for applicable cable types.

GENERAL SPECIFICATIONS

Construction: Plug-in

Connection: M3.5 screw terminals

Screw terminal: Chromated steel (standard) or stainless steel

Housing material: Flame-resistant resin (black)

Isolation: Input to output to power

Overrange output: -10 - +120 % at 1 - 5 V
(0 - 120 % when 0 % input equals to 0 Hz.)

Zero adjustment: -5 to +5 % (front)

Span adjustment: 95 to 105 % (front)

Linearization: 16 points max. represented as percentage of full-scale

Adjustments: Programming Unit (model: PU-2x); input range, low-end cutout, zero and span, simulating output, averaging nonuniform pulses, linearization data, etc. (Refer to the users manual of JXCON for the adjustments configurable with JXCON.)

Low-end cutout: 0 - 100 % adjustable (factory set to 0 %); hysteresis fixed to 1 %
(% of the range from 0 Hz to 100 % frequency.)

INPUT SPECIFICATIONS

Excitation: Shortcircuit protection

Pulse width (time) requirement: 10 msec. min. at < 20 Hz; duty ratio 20 - 80 % at \geq 20 Hz

Offset: Max. 3 times span

■ **Open Collector**

Frequency range: 0 - 0.01 Hz through 25 kHz
(0 - 1 kHz will be used if not otherwise specified)

Sensing: Approx. 12 V DC @ 3 mA

ON/OFF level: \leq 800 Ω / 2 V for ON,
 \geq 1.2 k Ω / 3.6 V for OFF

■ **Mechanical Contact**

Frequency range: 0 - 0.01 Hz through 5 Hz
(0 - 5 Hz will be used if not otherwise specified)

Sensing: Approx. 12 V DC @ 3 mA

ON/OFF level: \leq 800 Ω / 2 V for ON,
 \geq 1.2 k Ω / 3.6 V for OFF

■ **Voltage Pulse:** Square or sine waveforms

Frequency range: 0 - 0.01 Hz through 25 kHz
(0 - 1 kHz will be used if not otherwise specified.)

Input amplitude: 2 - 50 Vp-p

Input impedance: 10 k Ω min.

OUTPUT SPECIFICATIONS

■ **DC Current:** 0 - 20 mA DC

Minimum span: 1 mA

Offset: Max. 1.5 times span

Load resistance: Output drive 15 V max.

■ **DC Voltage:** -10 - +20 V DC

Span: Min. 5 mV, max. 20 V

Offset: Max. 1.5 times span

Load resistance: Output drive 1 mA max.; at \geq 0.5 V

INSTALLATION

Power input

• **AC:** Operational voltage range: rating \pm 10 %, 50/60 \pm 2 Hz, approx. 3 VA

• **DC:** Operational voltage range: rating \pm 10 %, ripple 10 %p-p max., approx. 2 W (90 mA at 24 V)

Operating temperature: -5 to +55°C (23 to 131°F)

Operating humidity: 30 to 90 %RH (non-condensing)

Mounting: Surface or DIN rail

Weight: 350 g (0.77 lb)

PERFORMANCE in percentage of span

Accuracy: \pm 0.1 % with segment gain \leq 1 [\pm 0.1 % \times gain] with segment gain $>$ 1

Temp. coefficient: \pm 0.015 %/°C (\pm 0.008 %/°F)

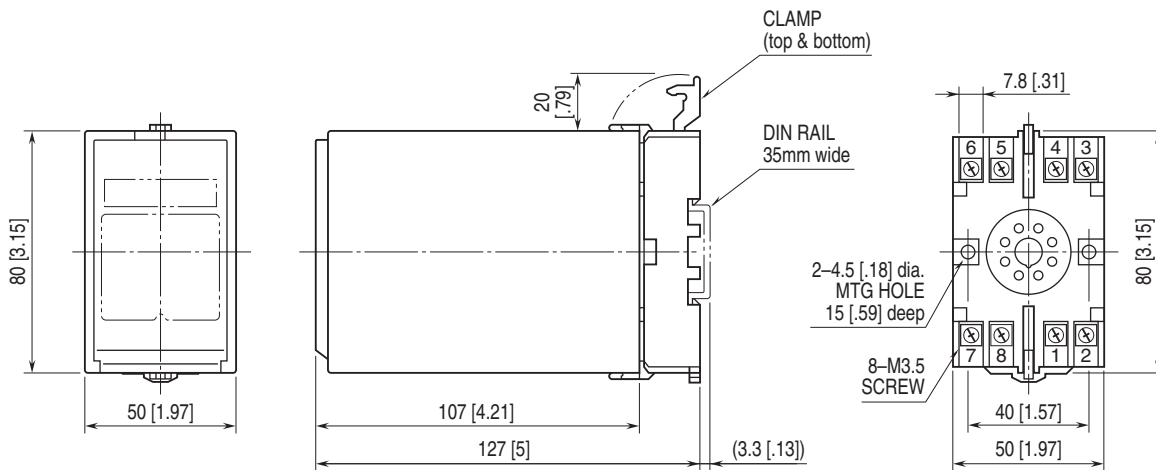
Response time: 0.5 sec. + 1 pulse cycle (0 - 90 %)

Line voltage effect: \pm 0.1 % over voltage range

Insulation resistance: \geq 100 M Ω with 500 V DC

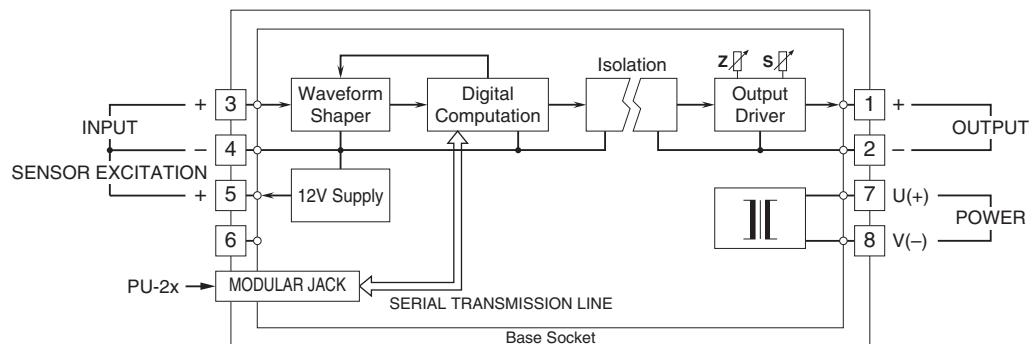
Dielectric strength: 2000 V AC @1 minute (input to output to power to ground)

EXTERNAL DIMENSIONS & TERMINAL ASSIGNMENTS unit: mm [inch]



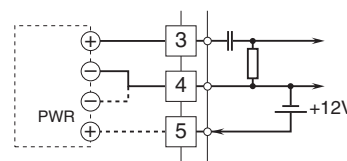
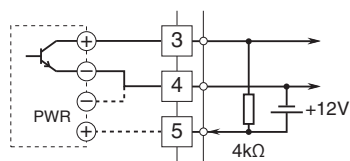
• When mounting, no extra space is needed between units.

SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM



Input Connection Examples

■ Open Collector or Mechanical Contact ■ Voltage Pulse



Specifications are subject to change without notice.